

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1362	345/473.ccls.	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2007/04/04 17:44
L4	406	animation same (smoke or gas or fluid or fog)	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2007/04/04 18:14
L6	75	simulation same (smoke or gas or fluid or fog) and advect\$4	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2007/04/04 18:15

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	882	703/6.ccls.	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2007/04/04 18:20

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L3	2	((2D adj grid\$1) and (3D adj space)).clm.	US-PGPUB	OR	OFF	2007/04/04 19:08
L4	6	(advect\$3 and movement).clm.	US-PGPUB	OR	OFF	2007/04/04 19:09

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Results 1 - 10 of about 2,320 for **smoke animation**. (0.10 seconds)

All Results

[K Perlin](#)

[G Wolberg](#)

[R Fedkiw](#)

[N Foster](#)

[J Stam](#)

[An image synthesizer - group of 2 »](#)

K Perlin - Proceedings of the 12th annual conference on Computer ..., 1985 - portal.acm.org
Google, Inc. Subscribe (Full Service), Register (Limited Service, Free),
Login. Search: The ACM Digital Library The Guide. ...

[Cited by 683](#) - [Related Articles](#) - [Web Search](#)

[Visual simulation of smoke - group of 37 »](#)

R Fedkiw, J Stam, HW Jensen - Proceedings of the 28th annual conference on Computer ..., 2001 - portal.acm.org

... The key to realistic **animation** of **smoke** is to make it look like a passive natural phenomena as opposed to a "living" creature made out of **smoke**. ...

[Cited by 257](#) - [Related Articles](#) - [Web Search](#)

[Keyframe control of smoke simulations - group of 9 »](#)

A Treuille, A McNamara, Z Popović, J Stam - ACM Transactions on Graphics (TOG), 2003 - portal.acm.org

... for of the **animation**. One may manipulate the initial specifications of the simulation, such as viscosity, temperature, location and quantity of **smoke**, but ...

[Cited by 60](#) - [Related Articles](#) - [Web Search](#) - [BL Direct](#)

[Rendering and animation of gaseous phenomena by combining fast volume and scanline A-buffer ...](#)

DS Ebert, RE Parent - Proceedings of the 17th annual conference on Computer ..., 1990 - portal.acm.org

... objects and is especially useful for rendering scenes containing gaseous phenomena such as clouds, fog, and **smoke**. The rendering and **animation** of these ...

[Cited by 122](#) - [Related Articles](#) - [Web Search](#)

[Volcanic smoke animation using cml - group of 3 »](#)

R Mizuno, Y Dobashi, T Nishita - Proc. of International Computer Symposium 2002, 2002 - mizuno.org

Page 1. Volcanic **Smoke Animation** using CML ... Abstract The **animation** of volcanic **smoke** is useful for natural disaster simulations, entertainments, etc. ...

[Cited by 3](#) - [Related Articles](#) - [View as HTML](#) - [Web Search](#)

[Flow volumes for interactive vector field visualization - group of 10 »](#)

N Max, B Becker, R Crawfis - Visualization, 1993. Visualization'93, Proceedings., IEEE ..., 1993 - ieeexplore.ieee.org

... The flow past a **smoke** or dye generator advects the tracer substance into a flow ... The result is an image or interactive **animation** simulating the results of the ...

[Cited by 69](#) - [Related Articles](#) - [Web Search](#)

[\[book\] Digital Image Warping - group of 3 »](#)

G Wolberg - 1994 - IEEE Computer Society Press Los Alamitos, CA, USA

... Lin Shi, Yizhou Yu, Controllable **smoke animation** with guiding objects, ACM Transactions on Graphics (TOG), v.24 n.1, p.140-164, January 2005. ...

[Cited by 873](#) - [Related Articles](#) - [Web Search](#) - [Library Search](#)

[Tobacco and Alcohol Use in G-Rated Children's Animated Films - group of 3 »](#)

AO Goldstein, RA Sobel, GR Newman - 1999 - Am Med Assoc

... and numerous bills were introduced in the US Congress intending to curb adolescent tobacco use, all released **animated** feature films incorporated **smoking** by 1 ...

[Cited by 44](#) - [Related Articles](#) - [Cached](#) - [Web Search](#) - [BL Direct](#)

[Animation and Simulation Techniques for VR-Training Systems in Endoscopic Surgery - group of 3 »](#)

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[J Stam](#)

[R Peacock](#)

[R Fedkiw](#)

[H Jensen](#)

[D Tate](#)

Smoke simulation for large scale phenomena - group of 10 »

N Rasmussen, DQ Nguyen, W Geiger, R Fedkiw - International Conference on Computer Graphics and ...
2003 - portal.acm.org

... **Smoke Simulation** For Large Scale Phenomena Nick Rasmussen Industrial Light + Magic
nick@ilm.com ... Visual **Simulation of Smoke**. In Proc. of SIGGRAPH 2001, 15-22. ...

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Rendering and animation of gaseous phenomena by combining fast volume and scanline A-buffer ...

DS Ebert, RE Parent - Proceedings of the 17th annual conference on Computer ..., 1990 - portal.acm.org
... for rendering scenes containing gaseous phenomena such as clouds, fog, and **smoke**. ...

1 James F. Blinn, Light reflection functions for **simulation** of clouds and ...

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Visual simulation of smoke - group of 37 »

R Fedkiw, J Stam, HW Jensen - Proceedings of the 28th annual conference on Computer ..., 2001 -
portal.acm.org

Visual **Simulation of Smoke** Ronald Fedkiw & ... Abstract In this paper, we propose a new
approach to numerical **smoke simulation** for computer graphics applications. ...

[Cited by 257](#) - [Related Articles](#) - [Web Search](#)

Virtual environments for shipboard firefighting training - group of 6 »

DL Tate, L Sibert, T King - Proceedings of the 1997 Virtual Reality Annual International ..., 1997 -
doi.ieeecomputersociety.org

... 9], with modifications and additions to support the 3D joystick interface, the
"fly where you point" metaphor, and improved fire and **smoke simulation**. Fig. ...

[Cited by 43](#) - [Related Articles](#) - [Web Search](#)

Efficient simulation of light transport in scences with participating media using photon maps - group of 2 »

HW Jensen, PH Christensen - Proceedings of the 25th annual conference on Computer ..., 1998 -
portal.acm.org

... Efficient **simulation** of light transport in scences with participating media
using photon maps. Full text, pdf formatPdf (10.04 MB). ...

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An image synthesizer - group of 2 »

K Perlin - Proceedings of the 12th annual conference on Computer ..., 1985 - portal.acm.org
... 1978. 3 Gardner, G., "Simulation of natural scenes using textured quadric

surfaces," Computer Graphics, vol. 18, no. 3, July 1984. ...

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Keyframe control of smoke simulations - group of 9 »

A Treuille, A McNamara, Z Popović, J Stam - ACM Transactions on Graphics (TOG), 2003 - portal.acm.org
... Ideally, in the domain of **smoke simulation**, animators could specify a set

of suggestive keyframes describing the desired behav- ior. ...

[Cited by 60](#) - [Related Articles](#) - [Web Search](#) - [BL Direct](#)

Using virtual environments to train firefighters - group of 6 »

DL Tate, L Sibert, T King - Computer Graphics and Applications, IEEE, 1997 - ieeexplore.ieee.org
... 10 with modifications and additions to support the 3D joystick interface, the "fly

where you point" metaphor, and improved fire and **smoke simulation**. ...

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[K Hoag](#)

[J Collett](#)

[M Kotulla](#)

[A Goudie](#)

[S Pandis](#)

Fog simulation for partially transparent objects - group of 4 »

JF Blinn - US Patent 6,184,891, 2001 - Google Patents

... (54) **FOG SIMULATION FOR PARTIALLY TRANSPARENT OBJECTS** (75) Inventor: James F. Blinn, Bellevue, WA (US) ... **FOG SIMULATION FOR PARTIALLY TRANSPARENT OBJECTS** ...

[Cited by 8](#) - [Related Articles](#) - [Web Search](#)

FOG SIMULATOR AND METHOD FOR ACCOMPLISHING AIRBORNE SIMULATION OF A FOG

EM Fletcher - US Patent 3,436,840, 1969 - Google Patents

... method for accomplishing airborne **simulation** of **fog** conditions by the selective programming of both ratio and total bright-ness of the **fog simulation** with the ...

[Cited by 5](#) - [Related Articles](#) - [Web Search](#)

VIDEO NPUT ELECTRONIC SYSTEM FOR VARYING FOG SIMULATION WITH CHANGES ALTITUDE FIG. 2 SERVO

US Patent 3,524,019, 1970 - Google Patents

... 11, 1970 RT COEN 3,524,019 31 41 VIDEO NPUT ELECTRONIC SYSTEM FOR VARYING **FOG SIMULATION** WITH CHANGES ALTITUDE FIG.2 SERVO 4, IN DIRECTION OF SIGHT Filed Aug. ...

[Cited by 4](#) - [Related Articles](#) - [Web Search](#)

SPECIAL EFFECTS ELECTRONIC SIMULATOR

RS Wise - US Patent 3,515,802, 1970 - Google Patents

... 32 SECONDARY TV CAMERA **FOG SIMULATION CIRCUIT FOG SIMULATION CONTROL INVERTED BLANKING**

BLANKING ... X **FOG SIMULATION VIDEO AMPLIFIER** a DC RESTORATION CIRCUIT ...

[Cited by 12](#) - [Related Articles](#) - [Web Search](#)

Simulation of fog with the ECMWF prognostic cloud scheme - group of 3 »

J TEIXEIRA - Quarterly Journal of the Royal Meteorological Society, 1999 - ingentaconnect.com

... parametrized physical processes suggests that the subtle balance between the various processes, fundamental for a realistic **fog simulation**, is achieved. ...

[Cited by 13](#) - [Related Articles](#) - [Web Search](#) - [Library Search](#) - [BL Direct](#)

FILM AND LAMP MOTION WITH PITCH RELATIVE TO OPTIC AXIS

A Simon - US Patent 3,548,515, 1970 - Google Patents

... image, together with the halo of light into a colli-mated image which the pilot may view by means of a 20 front surface mirror as a nighttime **fog simulation**. ...

[Cited by 4](#) - [Related Articles](#) - [Web Search](#)

Numerical modeling of water mist suppression of methane-air diffusion flames

K PRASAD, C LI, K KAILASANATH, C NDUBIZU, R ANANTH ... - Combustion science and technology, 1998 - cat.inist.fr

... extincteur; Fire extinguisher product; Producto extintor; Equation Navier Stokes; Navier Stokes equations; Brouillard; **Fog; Simulation** numérique; Numerical ...

[Cited by 25](#) - [Related Articles](#) - [Web Search](#) - [BL Direct](#)

Applications of pixel textures in visualization and realistic image synthesis - group of 14 »

W Heidrich, R Westermann, HP Seidel, T Ertl - Proceedings of the 1999 symposium on Interactive 3D graphics, 1999 - portal.acm.org

... Most graphics boards offer two kinds of **fog simulation**: the simpler version computes the absorption using a linear color ramp that depends on the z ...

[Cited by 74](#) - [Related Articles](#) - [Web Search](#)

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Results 1 - 10 of about 1,360 for **fog animation**. (0.25 seconds)

All Results

[D Ebert](#)

[R Parent](#)

[D Nadeau](#)

[D Nguyen](#)

[W Hibbard](#)

Building virtual worlds with VRML - group of 5 »

DR Nadeau, S Center, G Atomics, CA San Diego - Computer Graphics and Applications, IEEE, 1999 -
ieeexplore.ieee.org

... Introducing VRML As a text language, VRML lets you quickly build virtual worlds
incorporating 3D shapes, light sources, **fog**, **animation**, and even sound effects ...

[Cited by 42](#) - [Related Articles](#) - [Web Search](#) - [BL Direct](#)

Real-Time Animation of Realistic Fog - group of 4 »

V Biri, S Michelin, D Arquès - Thirteenth Eurographics Workshop On Rendering, 2002 - www-igm.univ-mlv.fr

... Real-Time **Animation** of Realistic **Fog** ... We also present a method to integrate wind
effects and **fog animation** without expensive cost in time. ...

[Cited by 6](#) - [Related Articles](#) - [View as HTML](#) - [Web Search](#)

Volumetric three-dimensional fog rendering technique - group of 2 »

N Sanz-Pastor, LA Barcena... - US Patent 6,268,861, 2001 - Google Patents

... Realistic **fog** effects must also be capable of **animation**. This allows
fog to swirl or move in a manner that mimics natural **fog**. ...

[Cited by 6](#) - [Related Articles](#) - [Web Search](#)

**Rendering and animation of gaseous phenomena by combining fast volume and scanline
A-buffer ...**

DS Ebert, RE Parent - Proceedings of the 17th annual conference on Computer ..., 1990 - portal.acm.org

... objects and is especially useful for rendering scenes containing gaseous phenomena
such as clouds, **fog**, and smoke. The rendering and **animation** of these ...

[Cited by 122](#) - [Related Articles](#) - [Web Search](#)

**Solid spaces and inverse particle systems for controlling the animation of gases and fluids
- group of 3 »**

DS Ebert, WE Carlson, RE Parent - The Visual Computer, 1994 - Springer

... Key words: Gaseous **animation** - Gaseous phenomena - Inverse particle systems - Solid
spaces - **Fog** and steam Offprint request to: RE Parent 1 Introduction ...

[Cited by 26](#) - [Related Articles](#) - [Web Search](#) - [BL Direct](#)

[CITATION] Real Time Animation of Realistic Fog, proc

V Biri, S Michelin, D Arquès - Thirteenth Eurographics Workshop on Rendering, poster session, 2002

[Cited by 1](#) - [Related Articles](#) - [Web Search](#)

[CITATION] Animation with Power Point: A Fog Cutter

WC Schultz - JOURNAL OF EDUCATIONAL TECHNOLOGY SYSTEMS, 1997 - BAYWOOD PUBLISHING
COMPANY

[Web Search](#) - [BL Direct](#)

NOAA-AVHRR and 4D GIS-towards a more realistic view of fogclearance - group of 5 »

J Bendix, F Berthmann, C Reudenbach - Geoscience and Remote Sensing Symposium, 1999. IGARSS'99
..., 1999 - ieeexplore.ieee.org

... a 3D volume rendering technique and a 4D **animation** procedure The application
extensively uses NOAA-AVHRR data to provide a realistic view of **fog** coverage and ...

[Cited by 1](#) - [Related Articles](#) - [Web Search](#)

**[PS] Procedural Modeling, Animation, and Rendering of Gases, Fluids, and Textures -
group of 5 »**

DS Ebert - Course in Siggraph'95, 1995 - cobweb.ecn.purdue.edu

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All Results

[N Foster](#)

[P Zellweger](#)

[D Metaxas](#)

[J Mackinlay](#)

[J Stam](#)

Controlling fluid animation - group of 16 »

N Foster, D Metaxas - Computer Graphics International, 1997 - doi.ieeecs.org

Page 1. Controlling **Fluid Animation** Nick Foster and Dimitris Metaxas ... Section 5 then presents an automatic procedure to stabilize a **fluid animation**. ...

[Cited by 68](#) - [Related Articles](#) - [Web Search](#)

3D realtime fluid animation by Navier-Stokes equations - group of 2 »

N da Vitoria Lobo, C Jinxiong - US Patent 5,537,641, 1996 - Google Patents

... [il] Patent Number: [45] Date of Patent: [54] 3D REALTIME FLUID ANIMATION BY NAVIER-STOKES EQUATIONS ... 3D REALTIME FLUID ANIMATION BY NAVIER-STOKES EQUATIONS ...

[Cited by 19](#) - [Related Articles](#) - [Web Search](#)

A continuum method for modeling surface tension - group of 5 »

JU Brackbill, DB Kothe, C Zemach - Journal of Computational Physics, 1992 - portal.acm.org

... Ken Tanaka, Heihachi Ueki, Atsushi Kunimatsu, The cubic interpolated level set method for realistic **fluid animation**, Proceedings of the SIGGRAPH 2003 ...

[Cited by 667](#) - [Related Articles](#) - [Web Search](#)

Realistic animation of liquids - group of 29 »

N Foster, D Metaxas - Graphical Models and Image Processing, 1996 - i31www.ira.uka.de

... the surface height is varied for **animation**, they treat the **fluid** as being completely flat during the calculation. Therefore, convective ...

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Practical animation of liquids - group of 32 »

N Foster, R Fedkiw - Proceedings of the 28th annual conference on Computer ..., 2001 - portal.acm.org

... Keywords: **animation**, computational **fluid** dynamics, implicit surface, level set, liquids, natural phenomena, Navier-Stokes, particles, semi-Lagrangian. ...

[Cited by 237](#) - [Related Articles](#) - [Web Search](#)

Animation and rendering of complex water surfaces - group of 27 »

D Enright, S Marschner, R Fedkiw - ACM Transactions on Graphics (TOG), 2002 - portal.acm.org

... in 3D **fluid** simulation technology along with ever increasing computational resources has set the stage for the inclusion of fully 3D **fluid animation** tools in a ...

[Cited by 187](#) - [Related Articles](#) - [Web Search](#) - [BL Direct](#)

Computational fluid dynamics in a traditional animation environment - group of 4 »

P Witting - Proceedings of the 26th annual conference on Computer ..., 1999 - portal.acm.org

Page 1. Computational **Fluid** Dynamics in a Traditional **Animation** Environment Patrick Witting DreamWorks Feature **Animation** and Squeaky Cat Abstract ...

[Cited by 47](#) - [Related Articles](#) - [Web Search](#)

Realistic Animation of Fluid with Splash and Foam - group of 3 »

T Takahashi, H Fujii, A Kunimatsu, K Hiwada, T ... - Computer Graphics Forum, 2003 - Blackwell Synergy

... Realistic **Animation** of **Fluid** with Splash and Foam. ... Ken Tanaka, Heihachi Ueki. Keywords: Keywords: **Animation**. Computational. **Fluid** Dynamics. Natural Phenomena. ...

[Cited by 35](#) - [Related Articles](#) - [Web Search](#)

Animation of Bubbles in Liquid - group of 4 »

JM Hong, CH Kim - Computer Graphics Forum, 2003 - Blackwell Synergy

... Abstract. We present a new **fluid animation** technique in which liquid and gas interact with each other, using the example of bubbles rising in water. ...

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[A Leonard](#)

[G Cottet](#)

[M Warren](#)

[H Aref](#)

[L Greengard](#)

Numerical study of a three-dimensional vortex method - group of 4 »

OM Knio, AF Ghoniem - Journal of Computational Physics, 1990 - portal.acm.org

... Numerical study of a **three-dimensional vortex method**. Source, Journal of Computational Physics archive Volume 86, Issue 1 (January 1990) table of contents. ...

[Cited by 55](#) - [Related Articles](#) - [Web Search](#)

Computing Three-Dimensional Incompressible Flows with Vortex Elements - group of 7 »

A Leonard - Annual Review of Fluid Mechanics, 1985 - fluid.annualreviews.org

... Leonard (1980b). Here the **vortex method** simulates a **three-dimensional**, unsteady, space-developing flow. Upstream boundary data ...

[Cited by 180](#) - [Related Articles](#) - [Web Search](#)

A Particle Method and Adaptive Treecode for Vortex Sheet Motion in Three-Dimensional Flow - group of 2 »

K Lindsay, R Krasny - Journal of Computational Physics, 2001 - aeronautics.eng.uci.edu

... In **two-dimensional** flow, the point **vortex method** replaces a continuous vortex sheet ... of resolving the surface, especially in the case of **three-dimensional** flow. ...

[Cited by 32](#) - [Related Articles](#) - [Web Search](#)

Vortex methods for direct numerical simulation of three-dimensional bluff body flows: application to ... - group of 8 »

P Ploumhans, GS Winckelmans, JK Salmon, A Leonard, ... - Journal of Computational Physics, 2002 - portal.acm.org

... Vortex methods for direct numerical simulation of **three-dimensional** bluff body flows: application to the sphere at Re = 300, 500, and 1000. ...

[Cited by 33](#) - [Related Articles](#) - [Web Search](#) - [BL Direct](#)

A comparison of spectral and vortex methods in three-dimensional incompressible flows - group of 8 »

GH Cottet, B Michaux, S Ossia, G VanderLinden - Journal of Computational Physics, 2002 - www-lmc.imag.fr

... This paper aims at achieving new quantitative information about the **vortex method** ac- Au: as meant? curacy in two- and **three-dimensional** configurations, by ...

[Cited by 25](#) - [Related Articles](#) - [Web Search](#) - [BL Direct](#)

An analysis of particle methods - group of 2 »

PA RAVIART - Numerical methods in fluid dynamics(A 86-29471 12-34). ..., 1985 - csa.com

... as to the **two-dimensional vortex method** and the consistency, stability, and error bounds of its convergence, together with the **three-dimensional vortex method**. ...

[Cited by 76](#) - [Related Articles](#) - [Web Search](#) - [Library Search](#)

A fast adaptive vortex method in three dimensions - group of 5 »

AS Almgren, T Buttke, P Colella - J. Comput. Phys, 1994 - osti.gov

... FLOW- COMPUTERIZED SIMULATION; INCOMPRESSIBLE FLOW- **THREE-DIMENSIONAL** CALCULATIONS; NAVIER ... nearby vortices. ^We present a fast **vortex method** for incompressible ...

[Cited by 28](#) - [Related Articles](#) - [Cached](#) - [Web Search](#) - [BL Direct](#)

Integrable, chaotic, and turbulent vortex motion in two-dimensional flows - group of 6 »

H Aref - Annual Review of Fluid Mechanics, 1983 - fluid.annualreviews.org

... The essential ingredient of Novikov's analysis is the interpretation of the triple (?2, £23, £3) as a point in **three-dimensional** space, constrained by (8 ...

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3D realtime fluid animation by Navier-Stokes equations - group of 2 »

N da Vitoria Lobo, C Jinxiong - US Patent 5,537,641, 1996 - Google Patents

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A continuum method for modeling surface tension - group of 5 »

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... Ken Tanaka, Heihachi Ueki, Atsushi Kunimatsu, The cubic interpolated level set method for realistic **fluid animation**, Proceedings of the SIGGRAPH 2003 ...

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Realistic animation of liquids - group of 29 »

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Practical animation of liquids - group of 32 »

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Computational fluid dynamics in a traditional animation environment - group of 4 »

P Witting - Proceedings of the 26th annual conference on Computer ..., 1999 - portal.acm.org

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... Realistic **Animation** of **Fluid** with Splash and Foam. ... Ken Tanaka. Heihachi Ueki. Keywords: Keywords: **Animation**. Computational. **Fluid** Dynamics. Natural Phenomena. ...

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Animation of Bubbles in Liquid - group of 4 »

JM Hong, CH Kim - Computer Graphics Forum, 2003 - Blackwell Synergy

... Abstract. We present a new **fluid animation** technique in which liquid and gas interact with each other, using the example of bubbles rising in water. ...

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Modeling the motion of a hot, turbulent gas - group of 13 »

N Foster, D Metaxas - Proceedings of the 24th annual conference on Computer ..., 1997 - portal.acm.org

... In order to solve the **gas** motion equations so that they represent the behavior of a **gas** in an **animation** environment, we need to represent the scene in a ...

[Cited by 200](#) - [Related Articles](#) - [Web Search](#)

Physically based modeling and animation of fire - group of 26 »

DQ Nguyen, R Fedkiw, HW Jensen - Proceedings of the 29th annual conference on Computer ..., 2002 - portal.acm.org

... of physically accurate firelight, and the impact of different fuel types on ... model with a rigid body motion simulator to produce realistic **animation** of flying ...

[Cited by 121](#) - [Related Articles](#) - [Web Search](#) - [BL Direct](#)

Solid spaces and inverse particle systems for controlling the animation of gases and fluids - group of 3 »

DS Ebert, WE Carlson, RE Parent - The Visual Computer, 1994 - Springer

... These techniques make extensive use of three-dimensional tables, including both flow vectors and motion functions for controlling **gas animation**. ...

[Cited by 26](#) - [Related Articles](#) - [Web Search](#) - [BL Direct](#)

Using a computer animation to improve students' conceptual understanding of a can crushing ... - group of 6 »

MJ Sanger, AJ Phelps, J Fienhold - Journal of Chemical Education, 2000 - jchemed.chem.wisc.edu

... We decided that developing an **animation** depicting the behavior of **gas** particles in the can-crushing demonstration might be helpful. ...

[Cited by 23](#) - [Related Articles](#) - [View as HTML](#) - [Web Search](#) - [BL Direct](#)

Realistic Animation of Fluid with Splash and Foam - group of 3 »

T Takahashi, H Fujii, A Kunimatsu, K Hiwada, T ... - Computer Graphics Forum, 2003 - Blackwell Synergy

... Realistic **Animation** of Fluid with Splash and Foam. ... The CIP method can solve liquid and **gas** together in the framework of fluid dynamics and has high accuracy in ...

[Cited by 35](#) - [Related Articles](#) - [Web Search](#)

Low voltage gas discharge device - group of 3 »

FH Cocks, PW Farner - US Patent 4,990,826, 1991 - Google Patents

... an illumination device capable of producing large **animated** displays using ... By means of large numbers of electrode pairs, **gas** discharge across the **gas** passage rather ...

[Cited by 20](#) - [Related Articles](#) - [Web Search](#)

Rendering and animation of gaseous phenomena by combining fast volume and scanline A-buffer ...

DS Ebert, RE Parent - Proceedings of the 17th annual conference on Computer ..., 1990 - portal.acm.org

... The rendering and **animation** of these phenomena has been a difficult problem in ... gaseous phenomena is presented, providing true three-dimensional volumes of **gas**. ...

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Simulating Nature: From Theory to Application - group of 2 »

DS Ebert - Course Note# 26 of SIGGRAPH, 1999 - siggraph.org

... based approaches for modeling and animating water, waves, and oceanscapes; practical application of fluid dynamics for water and **gas animation**; procedural and ...

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- ☐ **3. Particle-based visual simulation of explosive flames**
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[Computer Graphics and Applications, 2003. Proceedings. 11th Pacific Conference on](#)
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
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Gas-Phase Recirculation Cell **Visualization** The bright red **smoke** line in Fig. ...

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[book] **Flow Visualization - group of 4 »**

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ON THE HISTORICAL DEVELOPMENT OF APPARATUS AND TECHNIQUES FOR **SMOKE VISUALIZATION**

OF SUBSONIC AND SUPERSONIC FLOWS* ** Thomas J. Mueller University of Notre ...

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21 [Computational fluid dynamics in a traditional animation environment](#)



Patrick Witting

July 1999 **Proceedings of the 26th annual conference on Computer graphics and interactive techniques SIGGRAPH '99**

Publisher: ACM Press/Addison-Wesley Publishing Co.

Full text available:  [pdf\(734.22 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: animation, animation systems, applications, fluid simulations, natural phenomena, numerical analysis, physically based animation, physically based modeling, scientific visualization, texture mapping



22 [Fluid animation with dynamic meshes](#)



Bryan M. Klingner, Bryan E. Feldman, Nuttapong Chentanez, James F. O'Brien

July 2006 **ACM Transactions on Graphics (TOG), ACM SIGGRAPH 2006 Papers SIGGRAPH '06**, Volume 25 Issue 3

Publisher: ACM Press

Full text available:  [pdf\(468.07 KB\)](#)
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This paper presents a method for animating fluid using unstructured tetrahedral meshes that change at each time step. We show that meshes that conform well to changing boundaries and that focus computation in the visually important parts of the domain can be generated quickly and reliably using existing techniques. We also describe a new approach to two-way coupling of fluid and rigid bodies that, while general, benefits from remeshing. Overall, the method provides a flexible environment for cre ...

Keywords: computational fluid dynamics, natural phenomena, physically based animation

23 [Natural phenomena: Modeling and animating gases with simulation features](#)



Joshua Schpok, William Dwyer, David S. Ebert

July 2005 **Proceedings of the 2005 ACM SIGGRAPH/Eurographics symposium on Computer animation SCA '05**

Publisher: ACM Press

Full text available:  [pdf\(492.52 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In modeling natural phenomena, artists often compromise the benefits of direct control for the visual realism of physics-based simulation. For gases, Eulerian simulations traditionally provide realistic results, but a poor representation for artistically shaping the media. In our system, users work with a more intuitive set of continuously extracted features whose manipulation feeds back into the original simulation. This novel approach overcomes

Terms used **smoke visualization**

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1 [Dispersion Simulation and Visualization For Urban Security](#)

Feng Qiu, Ye Zhao, Zhe Fan, Xiaoming Wei, Haik Lorenz, Jianning Wang, Suzanne Yoakum-Stover, Arie Kaufman, Klaus Mueller

October 2004 **Proceedings of the conference on Visualization '04 VIS '04**

Publisher: IEEE Computer Society

Full text available:  pdf(545.62 KB) Additional Information: [full citation](#), [abstract](#), [citations](#)

We present a system for simulating and visualizing the propagation of dispersive contaminants with an application to urban security. In particular, we simulate airborne contaminant propagation in open environments characterized by sky-scrapers and deep urban canyons. Our approach is based on the Multiple Relaxation Time Lattice Boltzmann Model (MRTLBM), which can efficiently handle complex boundary conditions such as buildings. In addition, we model thermal effects on the flow field using the hy ...

Keywords: Lattice Boltzmann Model, GPU, Visualization

2 [Interactive scientific visualization and parallel display techniques](#)

J. A. Sethian, J. B. Salem, A. F. Ghoniem

November 1988 **Proceedings of the 1988 ACM/IEEE conference on Supercomputing Supercomputing '88**

Publisher: IEEE Computer Society Press

Full text available:  pdf(1.43 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, we describe a new graphics environment for essentially real-time interactive visualization of computational fluid mechanics. Within this environment, the researcher may interactively examine fluid data on a framebuffer with animated flow visualization diagnostics which mimic those in the experimental laboratory. This provides an effective and interactive way to analyze the underlying physical mechanisms, and to compare results with laboratory experiment. The system ...


3 [Wildfire visualization \(case study\)](#)

James Ahrens, Patrick McCormick, James Bossert, Jon Reisner, Judith Winterkamp

October 1997 **Proceedings of the 8th conference on Visualization '97 VIS '97**

Publisher: IEEE Computer Society Press

Full text available:  pdf(595.43 KB)

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4 [Session P8: nature visualization: Simulating fire with texture splats](#)

Xiaoming Wei, Wei Li, Klaus Mueller, Arie Kaufman

October 2002 **Proceedings of the conference on Visualization '02 VIS '02**

Terms used [fog visualization](#)

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1 [Vector field visualization: Real-time out-of-core visualization of particle traces](#)

Ralph Bruckschen, Falko Kuester, Bernd Hamann, Kenneth I. Joy

October 2001 **Proceedings of the IEEE 2001 symposium on parallel and large-data visualization and graphics PVG '01**

Publisher: IEEE Press

Full text available:  [pdf\(790.12 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Visualization of particle traces provides intuitive and efficient means for the exploration and analysis of complex vector fields. This paper presents a method suitable for the real-time visualization of arbitrarily large time-varying vector fields in virtual environments. We describe an out-of-core scheme in which two distinct pre-processing and rendering components enable real-time data streaming and visualization. The presented approach yields low-latency application start-up times and small ...

Keywords: Computational Fluid Dynamics, Out-of-Core Visualization, Particle Tracing, Scientific Visualization, Virtual Reality

2 [Applications: Visualization of particle traces in virtual environments](#)

Falko Kuester, Ralph Bruckschen, Bernd Hamann, Kenneth I. Joy

November 2001 **Proceedings of the ACM symposium on Virtual reality software and technology VRST '01**

Publisher: ACM Press

Full text available:  [pdf\(750.32 KB\)](#)

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Real-time visualization of particle traces in virtual environments can aid in the exploration and analysis of complex three dimensional vector fields. This paper introduces a scalable method suitable for the interactive visualization of large time-varying vector fields on commodity hardware. A real-time data streaming and visualization approach and its out-of-core scheme for the pre-processing and rendering of data are described. The presented approach yields low-latency application start-up time ...

Keywords: computational fluid dynamics, out-of-core visualization, particle tracing, scientific visualization, simulation, stereoscopic rendering, virtual reality, virtual wind tunnel

3 [Rendering: Squeeze: numerical-precision-optimized volume rendering](#)

Ingmar Bitter, Neophytos Neophytou, Klaus Mueller, Arie E. Kaufman

August 2004 **Proceedings of the ACM SIGGRAPH/EUROGRAPHICS conference on Graphics hardware HWWS '04**

Publisher: ACM Press

Full text available:  [pdf\(368.81 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Terms used **fog animation**

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1 [Rendering and animation of gaseous phenomena by combining fast volume and](#)



[scanline A-buffer techniques](#)

D. S. Ebert, Richard E. Parent

September 1990 **ACM SIGGRAPH Computer Graphics , Proceedings of the 17th annual conference on Computer graphics and interactive techniques SIGGRAPH '90**, Volume 24 Issue 4

Publisher: ACM Press

Full text available:  pdf(8.65 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes a new technique that efficiently combines volume rendering and scanline a-buffer techniques. This technique is useful for combining all types of volume-rendered objects with scanline rendered objects and is especially useful for rendering scenes containing gaseous phenomena such as clouds, fog, and smoke. The rendering and animation of these phenomena has been a difficult problem in computer graphics. A new algorithm for realistically modeling and animating gaseous phenomena ...

2 [Animation: Animating real-time realistic movements in small plants](#)



[Jason C. Wong, Amitava Datta](#)

June 2004 **Proceedings of the 2nd international conference on Computer graphics and interactive techniques in Australasia and South East Asia GRAPHITE '04**

Publisher: ACM Press

Full text available:  pdf(673.72 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Much of the research involved in computer graphics is focused on creating realistic images and animations that mimic the world we see around us, as well as creating believable environments not from this world. Techniques for animating realistic water, smoke, fire, fog, and other natural phenomena have been extensively explored. It is only recently that powerful computer hardware has become available to achieve these realistic animations. Compared with other natural phenomena, animations of vegeta ...

Keywords: animations, foliage, modeling, real-time, small plants

3 [Animation: From linear to interactive animation: how autonomous characters change the process and product of animating](#)



Bill Tomlinson

January 2005 **Computers in Entertainment (CIE)**, Volume 3 Issue 1

Publisher: ACM Press

Full text available:  pdf(641.54 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


There are significant differences between the art of animating for linear media such as film and video and the art of animating for interactive media such as computer and video games. In particular, these differences arise from the shift from linear characters to

Terms used gas visualization

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1 Session N1: Future trends in oil and gas visualization

Francine Evans, William Volz, Geoffrey Dorn, Bernd Fröhlich, David M Roberts

October 2002 **Proceedings of the conference on Visualization '02 VIS '02**

Publisher: IEEE Computer Society

Full text available:  pdf(35.45 KB) Additional Information: [full citation](#), [abstract](#), [citations](#)

The question that this panel wishes to explore is: What are the future visualization trends and requirements for the oil and gas industry to efficiently handle and explore the ever-increasing volume and variety of available data? It has been proven many times that 3D visualization helps to reduce the risk in the search for, and development of, oil and gas resources and has been generally acknowledged to be an indispensable technology for the oil and gas industry. The role of the geoscientist is t ...

2 Modeling methodology a: Visualization for modeling and simulation: problems of visualization of technological processes

Pavel Slavik, Marek Gayer, Frantisek Hrdlicka, Ondrej Kubelka

December 2003 **Proceedings of the 35th conference on Winter simulation: driving innovation WSC '03**

Publisher: Winter Simulation Conference

Full text available:  pdf(722.09 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

This paper deals with problems of visualization of dynamic phenomena. An effort to develop new visualization schemes has been described. The main idea is to extend approaches used in the case of visualization of phenomena of static nature into an environment where dynamic phenomena are investigated and visualized. We introduced the "level of detail" approach in time scaling in the environment of dynamic processes where time plays a primary role. In the case of visualization of dynamic phenome ...

3 Visualizing simulated room fires (case study)

Jayesh Govindarajan, Matthew Ward, Jonathan Barnett

October 1999 **Proceedings of the conference on Visualization '99: celebrating ten years VIS '99**

Publisher: IEEE Computer Society Press

Full text available:  pdf(147.93 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Recent advances in fire science and computer modeling of fires allow scientists to predict fire growth and spread through structures. In this paper we describe a variety of visualizations of simulated room fires for use by both fire protection engineers and fire suppression personnel. We also introduce the concept of fuzzy visualization, which results from the superposition of data from several separate simulations into a single visualization.

Keywords: fire modeling, scientific visualization, simulation

Terms used **gas animation**

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1 [Modeling the motion of a hot, turbulent gas](#)



Nick Foster, Dimitris Metaxas

August 1997 **Proceedings of the 24th annual conference on Computer graphics and interactive techniques SIGGRAPH '97**

Publisher: ACM Press/Addison-Wesley Publishing Co.

Full text available:  [pdf\(5.92 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#)

Keywords: animation, convection, gas simulations, gaseous phenomena, physics-based modeling, smoke, steam, turbulent flow

2 [Animating and rendering liquids: Physics based boiling simulation](#)

V. Mihalef, B. Unlusu, D. Metaxas, M. Sussman, M. Y. Hussaini

September 2006 **Proceedings of the 2006 ACM SIGGRAPH/Eurographics symposium on Computer animation SCA '06**

Publisher: Eurographics Association

Full text available:  [pdf\(246.52 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In order to animate complex fluid motion, computer animators have to rely on simulation systems that automatically generate the dynamics in a physics based manner. We focus in this paper on the phenomenon of boiling, which, due to its complex formulation and physics, has seen very little work done in the graphics field. We propose a new Eulerian method that couples gas and liquid with variable temperature and with a mass transfer mechanism, and we present its application to simulating boiling ph ...


3 [Fluids: Animation of reactive gaseous fluids through chemical kinetics](#)



Insung Ihm, Byungkwan Kang, Deukhyun Cha

August 2004 **Proceedings of the 2004 ACM SIGGRAPH/Eurographics symposium on Computer animation SCA '04**

Publisher: ACM Press

Full text available:  [pdf\(507.54 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Although chemically reactive fluids may be used effectively to increase the reality of visual effects, little work has been done with the general modeling of chemical reactions in computer animation. In this paper, we attempt to extend an established, physically based fluid simulation technique to handle reactive gaseous fluids. The proposed technique exploits the theory of chemical kinetics to account for a variety of chemical reactions that are frequently found in everyday life. In extendin ...

4

[Rendering and animation of gaseous phenomena by combining fast volume and scanline A-buffer techniques](#)